

Amendments to the Claim

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1: (Cancelled)

Claim 2: (Cancelled)

Claim 3: (Cancelled)

Claim 4: (Cancelled)

Claim 5: (Cancelled)

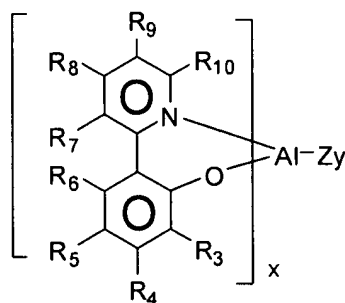
Claim 6: (Previously presented) A device comprising,

an anode;

a cathode;

a first organic layer disposed between the anode and the cathode, wherein the first organic layer produces phosphorescent emission when a voltage is applied between the anode and the cathode; and

an organic enhancement layer disposed between the first organic layer and the cathode, wherein the organic enhancement layer is in physical contact with the first organic layer, and wherein the organic enhancement layer comprises a material having the structure:



wherein R_3 - R_{10} are substituents, each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, perfluoroalkyl, trifluorovinyl, CO_2R_1 , $\text{C}(\text{O})\text{R}_1$, NR_1R_2 , NO_2 , OR_1 , halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, wherein each of R_1 and R_2 is independently selected from the group consisting of

hydrogen, alkyl, alkylaryl and aryl;

additionally or alternatively, any one or more of R_7 and R_8 , R_8 and R_9 , or R_9 and R_{10} , together form independently a fused aromatic ring;

each Z may be the same or different, and is an ancillary ligand;

x is a value from 1 to the maximum number of ligands that may be attached to the metal;

and

x+y is less than or equal to the maximum number of ligands that may be attached to the metal.

Claim 7: (Original) The device of claim 6, wherein y is zero.

Claim 8: (Original) The device of claim 6, wherein R_3 - R_{10} are each hydrogen.

Claim 9: (Cancelled)

Claim 10: (Cancelled)

Claim 11: (Cancelled)

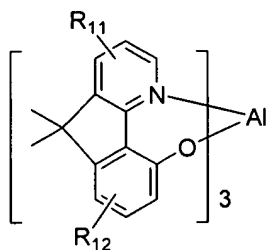
Claim 12: (Previously presented) A device comprising

an anode;

a cathode;

a first organic layer disposed between the anode and the cathode, wherein the first organic layer produces phosphorescent emission when a voltage is applied between the anode and the cathode; and

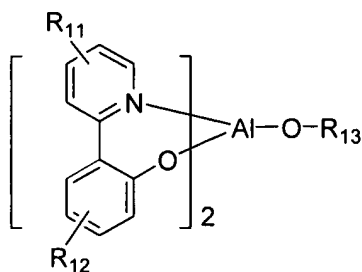
an organic enhancement layer disposed between the first organic layer and the cathode, wherein the organic enhancement layer is in physical contact with the first organic layer, and wherein the organic enhancement layer comprises a material of Formula IX having the structure:



IX

wherein R_{11} and R_{12} are substituents, each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, perfluoroalkyl, trifluorovinyl, CO_2R_1 , $\text{C}(\text{O})\text{R}_1$, NR_1R_2 , NO_2 , OR_1 , halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, wherein each of R_1 and R_2 is independently selected from the group consisting of hydrogen, alkyl, alkylaryl and aryl.

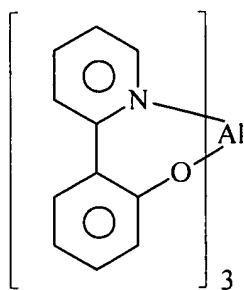
Claim 13: (Previously presented) The device of claim 6, wherein the organic enhancement layer comprises a material of Formula X having the structure:



X

wherein R_{11} , R_{12} and R_{13} are substituents, each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, perfluoroalkyl, trifluorovinyl, CO_2R_1 , $\text{C}(\text{O})\text{R}_1$, NR_1R_2 , NO_2 , OR_1 , halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, wherein each of R_1 and R_2 is independently selected from the group consisting of hydrogen, alkyl, alkylaryl and aryl.

Claim 14: (Previously presented) The device of claim 6, wherein the organic enhancement layer comprises a material of Formula XI having the structure:



XI.

Claim 15: (Currently amended) The device of claim 6 [[3]], wherein the material has a glass transition temperature of at least about 95° C.

Claim 16: (Previously presented) The device of claim 14, wherein the material of Formula XI has a glass transition temperature of at least about 108°C.

Claim 17: (Currently amended) The device of claim 6 [[3]], wherein the material has a fluorescence peak at less than about 450 nm.

Claim 18: (Previously presented) The device of claim 14, wherein the material of Formula XI present in the device has a fluorescence peak at less than about 430 nm.

Claim 19: (Cancelled)

Claim 20: (Cancelled)

Claim 21: (Currently amended) The device of claim 6 [[3]], wherein the organic enhancement layer is in physical contact with the cathode.

Claim 22: (Currently amended) The device of claim 6 [[3]], further comprising an additional organic layer disposed between the organic enhancement layer and the cathode.

Claim 23: (Currently amended) The device of claim 6 [[3]], wherein the first organic layer comprises a hole transporting material.

Claim 24: (Previously presented) The device of claim 23, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is not more than 0.3 eV less than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 25: (Previously presented) The device of claim 24, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is not more than 0.15 eV less than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 26: (Previously presented) The device of claim 23, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is greater than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 27: (Cancelled)

Claim 28: (Cancelled)

Claim 29: (Cancelled)

Claim 30: (Cancelled)

Claim 31: (Previously presented) A device, comprising:

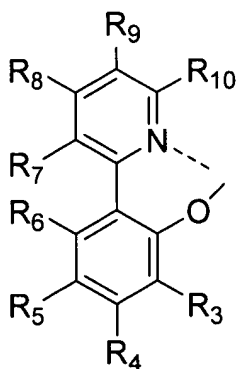
an anode;

a cathode;

a first organic layer disposed between the anode and the cathode, wherein the first

organic layer produces phosphorescent emission when a voltage is applied between the anode and the cathode; and

an organic enhancement layer disposed between the first organic layer and the cathode, wherein the organic enhancement layer is in physical contact with the first organic layer, and wherein the organic enhancement layer comprises a material which comprises a ligand having the structure:



wherein the ligand is attached to a metal M, such that the resulting material has (i) an oxygen-metal bond and (ii) the nitrogen is coordinated to the metal;

wherein R₃-R₁₀ are substituents, each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, perfluoroalkyl, trifluorovinyl, CO₂R₁, C(O)R₁, NR₁R₂, NO₂, OR₁, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, wherein each of R₁ and R₂ is independently selected from the group consisting of hydrogen, alkyl, alkylaryl and aryl; and,

additionally or alternatively, any one or more of R₇ and R₈, R₈ and R₉, or R₉ and R₁₀, together form independently a fused aromatic ring; and

wherein M is aluminum.

Claim 32: (Currently amended) The device of claim 31 [[27]], wherein R₃, R₄, R₅ and R₆ are each hydrogen.

Claim 33: (Cancelled)

Claim 34: (Currently amended) The device of claim 31 [[27]], wherein the first organic layer comprises a hole transporting material.

Claim 35: (Previously presented) The device of claim 34, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is not more than 0.3 eV less than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 36: (Previously presented) The device of claim 35, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is not more than 0.15 eV less than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 37: (Previously presented) The device of claim 34, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is greater than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 38: (Cancelled)

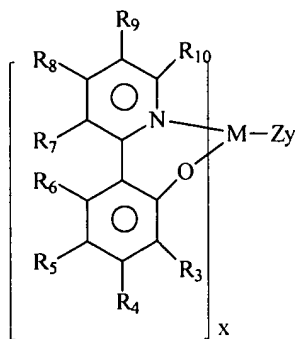
Claim 39: (Currently amended) A device comprising:

an anode;

a cathode;

a first organic layer disposed between the anode and the cathode, wherein the first organic layer produces phosphorescent emission when a voltage is applied between the anode and the cathode; and

an organic enhancement layer disposed between the first organic layer and the cathode, wherein the organic enhancement layer is in physical contact with the first organic layer, and wherein the organic enhancement layer comprises a material of Formula V having the structure:



V

wherein

M is a metal selected from the group consisting of aluminum, gallium, zinc, copper, and lead;

R₃-R₁₀ are substituents, each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, perfluoroalkyl, trifluorovinyl, CO₂R₁, C(O)R₁, NR₁R₂, NO₂, OR₁, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, wherein each of R₁ and R₂ is independently selected from the group consisting of hydrogen, alkyl, alkylaryl and aryl;

additionally or alternatively, any one or more of R₇ and R₈, R₈ and R₉, or R₉ and R₁₀, together form independently a fused aromatic ring;

each Z may be the same or different, and is an ancillary ligand;

x is a value from 1 to the maximum number of ligands that may be attached to the metal;

and

x+y is less than or equal to the maximum number of ligands that may be attached to the metal

~~wherein M is selected from the group consisting of aluminum, gallium, zinc, copper and lead.~~

Claim 40: (Previously presented) The device of claim 39, wherein y is zero and x is the maximum number of ligands that may be attached to the metal M.

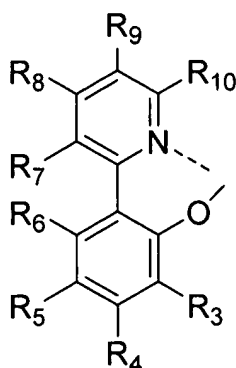
Claim 41: (Previously presented) A device, comprising:

an anode;

a cathode;

a first organic layer disposed between the anode and the cathode, wherein the first organic layer produces phosphorescent emission when a voltage is applied between the anode and the cathode; and

an organic enhancement layer disposed between the first organic layer and the cathode, wherein the organic enhancement layer is in physical contact with the first organic layer, and wherein the organic enhancement layer comprises a material which comprises a ligand having the structure:



wherein the ligand is attached to a metal M, such that the resulting material has (i) an oxygen-metal bond and (ii) the nitrogen is coordinated to the metal;

wherein R₃-R₁₀ are substituents, each independently selected from the group consisting of hydrogen, alkyl, alkenyl, alkynyl, alkylaryl, CN, perfluoroalkyl, trifluorovinyl, CO₂R₁, C(O)R₁, NR₁R₂, NO₂, OR₁, halo, aryl, heteroaryl, substituted aryl, substituted heteroaryl or a heterocyclic group, wherein each of R₁ and R₂ is independently selected from the group consisting of hydrogen, alkyl, alkylaryl and aryl; and,

additionally or alternatively, any one or more of R₇ and R₈, R₈ and R₉, or R₉ and R₁₀, together form independently a fused aromatic ring

wherein M is selected from the group consisting of aluminum, gallium, zinc, copper and lead.

Claim 42. (New) The device of claim 39, wherein R₃-R₁₀ are each hydrogen.

Claim 43: (New) The device of claim 39, wherein y is zero.

Claim 44: (New) The device of claim 39, wherein the material has a glass transition temperature of at least about 95° C.

Claim 45: (New) The device of claim 39, wherein the material has a fluorescence peak at less than about 450 nm.

Claim 46: (New) The device of claim 39, wherein the organic enhancement layer is in physical contact with the cathode.

Claim 47: (New) The device of claim 39, further comprising an additional organic layer disposed between the organic enhancement layer and the cathode.

Claim 48: (New) The device of claim 39, wherein the first organic layer comprises a hole transporting material.

Claim 49: (New) The device of claim 48, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is not more than 0.3 eV less than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 50: (New) The device of claim 49, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is not more than 0.15 eV less than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.

Claim 51: (New) The device of claim 48, wherein the organic enhancement material comprises a material having a lowest unoccupied molecular orbital energy level that is greater than the energy level of the lowest unoccupied molecular orbital of the hole transporting material in the first organic layer.